

1. An adhesive sheet for a semiconductor connecting substrate being constituted by a laminate having an adhesive layer on a substrate, wherein said adhesive layer contains a thermoplastic resin (A) and an epoxy resin (B), and said epoxy resin (B) contains at least one epoxy resin (B) selected from the following (I), (II), (III) and (IV) as an essential component:

spec. sheet

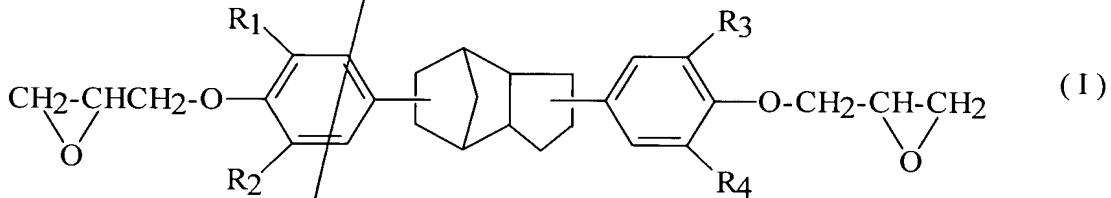
(I) Dicyclopentadiene skeleton-containing epoxy resins,

(II) Terpene skeleton-containing epoxy resins, and

(III) Biphenyl skeleton-containing epoxy resins.

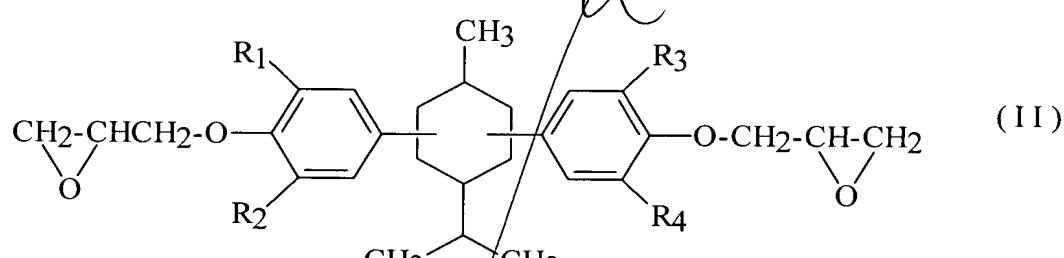
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2. An adhesive sheet for a semiconductor connecting substrate according to claim 1, wherein the dicyclopentadiene skeleton-containing epoxy resins (b1) are represented by the following general formula (I):



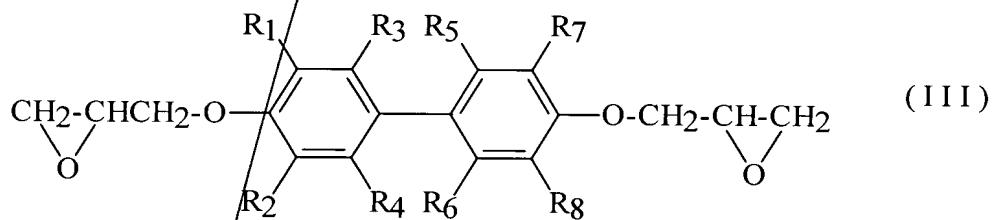
(in formula (1), R₁ to R₄ stand for a hydrogen atom, lower alkyl group with 1 to 4 carbon atoms or halogen atom.)

3. An adhesive sheet for a semiconductor connecting substrate according to claim 1, wherein the terpene skeleton-containing epoxy resins (b2) are represented by the following general formula (II):



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(in formula (II), R₁ to R₄ stand for a hydrogen atom, lower alkyl group with 1 to 4 carbon atoms or halogen atom.)

4. An adhesive sheet for a semiconductor connecting substrate according to claim 1, wherein the biphenyl skeleton-containing epoxy resins (b3) are represented by the following general formula (III):



(in formula (III), R₁ to R₈ stand for, respectively independently, a hydrogen atom, lower alkyl group with 1 to 4 carbon atoms or halogen atom.)

5. An adhesive sheet as claimed in claim 1 for a semiconductor connecting substrate which forms an adhesive layer (E) of a semiconductor integrated circuit board having at least, respectively, one wiring board layer (C) having an insulator layer and a conductor pattern, one layer without any conductor pattern formed (D) and one adhesive layer (E), wherein said adhesive sheet has a storage elastic modulus of 0.1 to 10000 MPa and a coefficient of linear expansion of $0.1 \times 10^{-5} \sim 50 \times 10^{-5} \text{ }^{\circ}\text{C}^{-1}$ in a temperature range of -50 to 150°C after having been cured by heating.

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6. An adhesive sheet for a semiconductor connecting substrate according to claim 5, which has a breaking energy at 25°C of $5 \times 10^5 \text{ Nm}^{-1}$ or more after having been cured by heating.

7. An adhesive sheet for a semiconductor connecting substrate having at least, respectively, one wiring board layer (C) being constituted by an insulator layer and a conductor pattern, one layer without any conductor pattern formed (D) and one adhesive layer (E), which forms an adhesive layer (E) of a semiconductor integrated circuit board, wherein said adhesive sheet contains at least, respectively, one thermoplastic resin (A) and one epoxy resin (B) as essential

components, and said epoxy resin (B) contains at least one epoxy resin (B) selected from the following (I), (II), and (III) as an essential component:

(I) Dicyclopentadiene skeleton-containing epoxy resins,

(II) Terpene skeleton-containing epoxy resins, and

(III) Biphenyl skeleton-containing epoxy resins.

8. An adhesive sheet for a semiconductor connecting substrate according to claim 7, wherein the thermoplastic resin (A) is a copolymer (a1) containing butadiene as an essential comonomer.

9. An adhesive sheet for a semiconductor connecting substrate according to claim 7, wherein the thermoplastic resin (A) contains a copolymer (a2) having butadiene as an essential comonomer and having carboxyl groups.

10. An adhesive sheet for a semiconductor connecting substrate according to claim 7, wherein the thermoplastic resin (A) is a polyamide resin (a3) containing a dicarboxylic acid with 36 carbon atoms as an essential component.

11. An adhesive sheet for a semiconductor connecting substrate according to claim 7, wherein the thermoplastic resin (A) is a polyamide resin (a3) containing a dicarboxylic acid with 36 carbon atoms as an essential component and is a polyamide resin (a4) having an amine value of more than 1 and less than 3.

12. An adhesive sheet for a semiconductor connecting substrate according to claim 7, which additionally contains a phenol resin (F).

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13. A semiconductor connecting substrate comprising the use of the adhesive sheet for a semiconductor connecting substrate stated in claim 7, wherein said semiconductor connecting substrate has at least, respectively, one wiring board layer (C) being constituted by an insulator layer and a conductor pattern, one layer without any conductor pattern formed (D) and one adhesive layer (E).

14. A semiconductor device comprising the use of the semiconductor connecting substrate stated in claim 13.

15. An adhesive-backed tape for TAB being constituted by a laminate as claimed in claim 1, said laminate having an

adhesive layer and a protective film layer on a flexible organic insulating film, wherein said adhesive layer has a softening temperature of 60 to 110°C after having been cured, and has an insulation resistance dropping time of 50 hours or more after having been allowed to stand in an environment of 130°C and 85% RH with DC 100 V applied.

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16. An adhesive-backed tape for TAB according to claim 15, wherein the adhesive layer has a breaking energy of 5×10^5 Nm⁻¹ or more at 25°C after having been cured by heating.

17. An adhesive-backed tape for TAB being constituted by a laminate having an adhesive layer and a protective film layer on a flexible organic insulating film, wherein said adhesive layer contains a thermoplastic resin (A) and an epoxy resin (B) and said epoxy resin (B) contains at least one epoxy resin (B) selected from the following (I), (II), and (III) as an essential component:

- (I) Dicyclopentadiene skeleton-containing epoxy resins,
- (II) Terpene skeleton-containing epoxy resins, and
- (III) Biphenyl skeleton-containing epoxy resins.

18. An adhesive-backed tape for TAB according to claim 17, wherein the thermoplastic resin (A) is a polyamide resin (a) containing a dicarboxylic acid with 36 carbon atoms as an essential component.

19. An adhesive-backed tape for TAB according to claim 17, wherein the thermoplastic resin (A) is a polyamide resin (a) containing a dicarboxylic acid with 36 carbon atoms as an essential component and is a polyamide resin (a') having an amine value of 1 or more and 3 or less.

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20. An adhesive-backed tape for TAB according to claim 17, wherein the adhesive layer additionally contains a phenol resin (F).

21. An adhesive-backed tape for TAB according to claim 20, wherein the phenol resin (F) contains more than 35 wt% and less than 60 wt% of a resol type phenol resin based on the weight of the adhesive layer.

22. An adhesive-backed tape for TAB according to claim 21, wherein the resol type phenol resin contains a bifunctional phenol derivative (f1) with at least one alkyl group with 5 to 12 carbon atoms and a trifunctional or higher-

functional phenol derivative (f2) as essential components, with the condition that $f1/(f1 + f2) = 0.2 \sim 0.8$.

23. An adhesive-backed tape for TAB according to claim 15, wherein the organic insulating film is a polyimide film.

24. A semiconductor connecting substrate comprising the use of the adhesive-backed tape for TAB stated in claim 15.

25. A semiconductor device comprising the use of the semiconductor connecting substrate stated in claim 24.

26. An adhesive-backed tape for wire bonding connection being constituted by a laminate as claimed in claim 1, said laminate having an adhesive and a protective film layer on a flexible organic insulating film, wherein said adhesive layer has a softening temperature of 120 to 200°C after having been cured, a storage elastic modulus of 20 to 100 MPa at 150°C and an insulation resistance dropping time of 50 hours or more after having been allowed to stand in an environment of 130°C and 85% RH with DC 100 V applied.

27. An adhesive-backed tape for wire bonding connection according to claim 26, wherein the adhesive layer contains a

thermoplastic resin (A) and an epoxy resin (B), and the film made of 1/1 mixture consisting of said thermoplastic resin (A) and said epoxy resin (B) is 8 to 40 in haze.

28. An adhesive-backed tape for wire bonding connection according to claim 26, wherein the adhesive layer contains a thermoplastic resin (A) and an epoxy resin (B) and said epoxy resin (B) contains at least one epoxy resin (B) selected from the following (I), (II) and (III) as an essential component:

~~Sub~~ (I) Dicyclopentadiene skeleton-containing epoxy resins,

(II) Terpene skeleton-containing epoxy resins, and

(III) Biphenyl skeleton-containing epoxy resins.

29. An adhesive-backed tape for wire bonding connection according to claim 28, wherein the epoxy resin content is 10 wt% to 40 wt% based on the weight of the adhesive layer.

30. An adhesive-backed tape for wire bonding connection according to claim 28, wherein the thermoplastic resin (A) is a polyamide resin (a) containing a dicarboxylic acid with 36 carbon atoms as an essential component.

31. An adhesive-backed tape for wire bonding connection according to claim 28, wherein the thermoplastic resin (A) consists of a polyamide resin (a) containing a dicarboxylic acid with 36 carbon atoms as an essential component and a polyamide resin (a') having an amide value of 1 or more and 3 or less.

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Adhesive-backed tape for wire bonding connection*

32. An adhesive-backed tape for wire bonding connection according to claim 28, wherein the adhesive layer contains additionally a phenol resin (F).

33. An adhesive-backed tape for wire bonding connection according to claim 32, wherein the phenol resin (F) contains a resol type phenol resin of more than 35 wt% and less than 60 wt% based on the weight of the adhesive layer.

34. An adhesive-backed tape for wire bonding connection according to claim 26, wherein the organic insulating film is a polyimide film.

35. A semiconductor connecting substrate comprising the use of the adhesive-backed tape for wire bonding connection stated in claim 26.

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36. A semiconductor device comprising the use of the semiconductor connecting substrate stated in claim 35.

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